

REPTILIA: SQUAMATA: COLUBRIDAE

PLIOCERCUS BICOLOR

Catalogue of American Amphibians and Reptiles.

Smith, H.M. and D. Chiszar. 2001. *Pliocercus bicolor*.

***Pliocercus bicolor* Smith**
Northern False Coral Snake

Pliocercus aequalis: Cope 1887:79 (part, *nec* Salvin).

Pliocercus bicolor Smith 1941:123. Type locality, "Tuxpan, [Veracruz, México]," in error, probably in the foothills west of there. Holotype, National Museum of Natural History (USNM) 25203, an adult female, collected by G.C. Lincecum, date of collection unknown, but prior to 1887 (Cope 1887) (examined by authors).

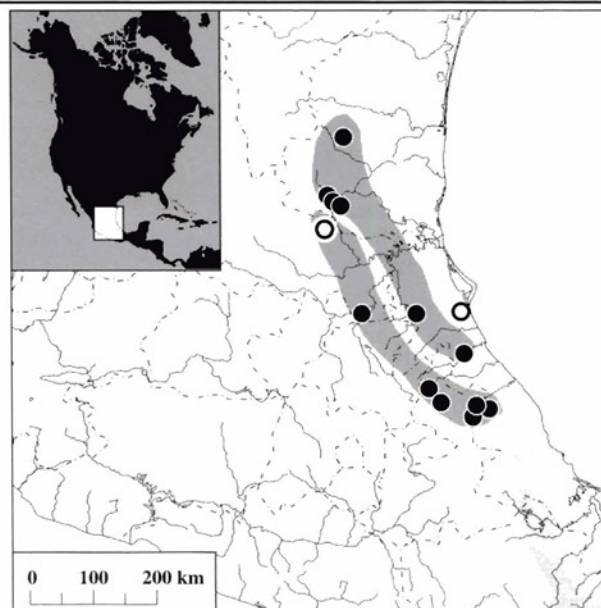
Pliocercus euryzonus: Stuart 1948:71 (part, *nec* Cope).

Pliocercus elapoides: Wilson and Meyer 1982:88 (part, *nec* Cope).

Urotheca elapoides: Savage and Crother 1989:357 (part, *nec* Cope).

• **CONTENT.** Two subspecies, *Pliocercus b. bicolor* and *P. b. hobartsmithi*, are recognized.

• **DEFINITION.** *Pliocercus bicolor* is a small colubrid snake of the tricolor *P. elapoides* complex (see **Etymology**), with a maximum known TL = 643 mm. The tail is 37–42% of TL in males, 34–40% in females. Eight supralabials usually are present (3% of specimens with 9 on a side); infralabials usually 11 (3% of specimens with 9 on a side);



MAP. Distribution of *Pliocercus bicolor*. Circles indicate the type localities of the valid taxa; that of *P. b. bicolor* is in error and lies outside the range of that taxon. Dots indicate other known localities. The lightly shaded area represents the nearest approach of the range of *P. elapoides* to that of *P. bicolor*; between lies the Palma Sola barrier.



FIGURE 1. The most common pattern of *Pliocercus bicolor hobartsmithi*, from El Salto Falls, San Luis Potosí, México (photograph by J.R. Dixon; from Campbell and Lamar 1989).



FIGURE 2. *Micrurus tener microgalbivus* (from Roze 1996); this species appears to be the model for the normal pattern of *P. b. hobartsmithi*.

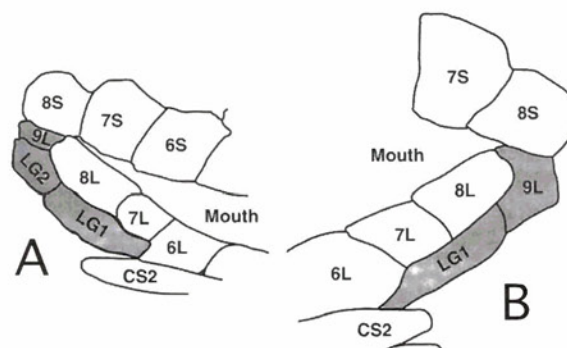


FIGURE 3. Two scale arrangements involving the posterior infralabial: A. the primitive condition, occurring in all taxa of *Pliocercus* except *P. bicolor*, with the posterior infralabial (9L) separated from the second (posterior) labiogenial (LG2) (*P. elapoides*, UCM 52525, right side). B. the derived condition, occurring in all *P. bicolor*, with the posterior infralabial fused with the second labiogenial (*P. b. bicolor*, MCZ 124830, left side). Key to labels: CS, posterior chinshield (numbered); L, infralabials (numbered); LG, labiogenials (numbered); S, supralabials (numbered).



FIGURE 4. *Micrurus t. tener* from Los Angeles, Texas; this taxon appears to be the model for *Pliocercus b. bicolor* (photograph by J.A. Campbell; from Campbell and Lamar 1989).

with 10); preoculars usually 2 (67%; 30% with one, 3% with 3, on a side); postoculars usually 2 (10% with 1 on a side); temporals usually 1–1–2 (1–2–2 on a side in 1%). Ventral scales number 123–131 in males (\bar{x} = 127, N = 19), 129–140 in females (\bar{x} = 137, N = 44, except for one anomalous specimen with 119, in which some ventrals are divided, both partially and entirely, and both transversely and longitudinally). Subcaudals number 91–97 in males (\bar{x} = 95, N = 12), 83–92 in females (\bar{x} = 87, N = 25).

Black rings on body number 7–16, on tail 4–15. Each is bordered at each end by a narrow yellow (in life) ring, 0.5–1 scale long and separated by long red rings. Some or all of dorsal scales in red rings are faintly to prominently black-tipped. Secondary black borders in red rings, next to the yellow rings, are absent or small and poorly defined.

• **DIAGNOSIS.** *Pliocercus bicolor* is unique in the genus in having the posterior infralabial fused with the posterior labiogenial. All specimens examined (N = 64) have those two



FIGURE 5. Dorsal views of representative specimens of *Pliocercus b. bicolor*, all from the vicinity of Rancho del Cielo, 5 mi NW Gómez Farías, Tamaulipas, México (UMMZ 100183, 100186, 108787, 111032) (from Smith et al. 1989). Note that two specimens have exceptionally long black rings and that one individual has only seven rings, the fewest known in the species. The only other species of the tricolor complex with as few and as long or longer black rings is *P. andrewsi*.



FIGURE 6. *Pliocercus bicolor hobartsmithi* from Xilitla, San Luis Potosí, México (from Taylor 1950); this unusual pattern apparently never occurs in *P. b. bicolor*.

scales fused on one (N = 2) or both (N = 62) sides. Only two of 452 other congeners had these scales fused on only one side. In addition, no other species with red, black, and yellow rings has 8 or more black rings on body equally as long as in *P. b. bicolor* (some *P. andrewsi*, equally long ringed, have as many as 7, but that species also differs in having separate posterior infralabials and labiogenials).

• **DESCRIPTIONS AND ILLUSTRATIONS.** Original descriptions are in Smith (1941, 1943) and Liner (1960). Redescrptions are in Taylor (1949), Smith et al. (1989), and Smith and Chiszar (1996). A color photograph appears in Campbell and Lamar (1989), a color painting in Greene and McDiarmid (1981), and black and white illustrations in Taylor (1950), Smith et al. (1989), and Smith and Chiszar (1996).

• **DISTRIBUTION.** *Pliocercus bicolor* is the northernmost representative of its genus. Its range extends along the humid, shady eastern foothills of the Sierra Madre Oriental from central western Tamaulipas southward into the northern quarter of Veracruz (Smith and Darling 1952, Flores Villela et al. 1991); the species apparently does not occur in the coastal plain (Martin 1958). In addition, an apparently isolated population (*P. b. hobartsmithi*) occurs at higher elevations on the plateau, along the western slopes of the Sierra, from southeastern San Luis Potosí to extreme northern Puebla and adjacent Veracruz.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** The best reference for natural history of this species is Martin (1958). Greene (1969) added additional information. Variation in the large series Martin (1958) reported is summarized in Smith et al. (1989). Pérez and Navarro (1980) hypothesized that the Palma Sola ridge served as a barrier isolating *P. bicolor* to the north from *P. elapoides* to the south. Wilson and Meyer (1982, 1985) and Savage and Crother (1989) argued that the names *bicolor*, *celatus*, and *hobartsmithi* are all invalid junior synonyms of *P. elapoides* Cope, but they were not aware of the critical differences in scalation and pattern between them.

Additional comments are in Benítez-Galvez (1987, Puebla), Cochran (1961, list of type specimens), Crippen (1962, list of type specimens), Flores-Villela and Gérez (1988, 1994, faunal lists), Flores-Villela and McCoy (1993, faunal list), Martin (1955, Tamaulipas), McCranie (1993, review), Pelcastre-Villafuerte and Flores-Villela (1992, Veracruz, habitat), Pérez and Smith (1986, 1991, taxonomy), Peters and Orejas-Miranda (1970, list), Peters et al. (1986, list), Smith (1943, mention), Smith et al. (1995 [1996], taxonomy), Smith and Smith (1976, 1993, literature), Smith and Taylor (1945, 1966, checklists), and Smith and Taylor (1950, type localities).

• **REMARKS.** Wilson and Meyer (1982, 1985), Savage and Crother (1989), and Wilson and McCranie (1997), among others, regarded *P. bicolor*, *P. e. celatus* and *P. e. hobartsmithi* as junior synonyms of *P. elapoides*. The present authors also misconstrued application of these names until the present arrangement was proposed by Smith and Chiszar (1996). The combination of: (1) the unique fusion of the last infralabial with the second labiogenial, and (2) the unique features of patterns having the same scale character, distinguishes this species from all others of the genus.

At present *P. bicolor* appears to be completely isolated from *P. elapoides* to the south. The Palma Sola ridge narrowly but definitely separates the ranges of those two species on the east side of the Sierra Madre Oriental (Pérez and Navarro 1980); on the west side, only *P. b. hobartsmithi* is known to occur. The

same barrier affects the known distribution of numerous other organisms, of which *Bufo valliceps* and *B. nebulifer* are recently discovered examples (Mulcahy and Mendelson 2000).

The invasion of the plateau by what became *P. b. hobartsmithi* presumably followed the valley of the Río Pánuco—a pattern that other species (e.g., *Ficimia hardyi*, Mendoza-Quijano and Smith 1993) of eastern slope origins apparently followed in migrating onto the western slopes at higher altitudes on the plateau (Smith and Chiszar 1996).

The only previous application of common names to the present taxa is in Smith and Chiszar (1996). We here retain their name for the species, but utilize modifiers for the subspecies that reflect the differences in their habitats.

• **ETYMOLOGY.** The name *bicolor* (Latin, two-colored) was applied to this species on the basis of a single, long-preserved specimen, in which the yellow rings had faded and were indistinguishable from the red rings inasmuch as the scales in the presumed red rings were not uniformly black-tipped (frequently a clue to presence of yellow rings, which are virtually never black-tipped). Additionally, no secondary black rings were present, as is distinctive, bordering the yellow rings, in the only adjacent congener known at the time (*P. elapoides*). Therefore, the snake was erroneously regarded as having only red and black rings—a conclusion reached long ago by Cope (1887), who identified the specimen as *P. aequalis*, a sometimes secondarily bicolored species originally described from Guatemala.

The name *hobartsmithi* honors the author of the name *bicolor*.

1. *Pliocercus bicolor bicolor* Smith Tamaulipan False Coral Snake

Pliocercus aequalis: Cope 1887:79 (Tuxpan; part, *nec* Salvin).

Pliocercus bicolor Smith 1941:123. See species synonymy.

Pliocercus euryzonus bicolor: Stuart 1948:71.

Pliocercus bicolor bicolor: Smith and Chiszar 1996:42.

Pliocercus elapoides celatus Smith 1943:344. Type locality, "Ciudad Victoria, Tamaulipas," in error *fide* Martin (1958). Holotype, Museum of Vertebrate Zoology (MVZ) 24689, an adult male, collected by M. Embury, 31 June 1937 (examined by authors).

Pliocercus elapoides: Martin 1955:355 (*nec* Cope).

Urotheca elapoides: Savage and Crother 1989:357 (part, *nec* Cope).

Pliocercus euryzonus: Wilson and Meyer 1982:90 (part, *nec* Cope).

• **DIAGNOSIS.** This subspecies differs from *P. b. hobartsmithi* in having exceptionally long black rings—longer than in any other taxon of the tricolor complex except *P. andrewsi*; these are present at least on most of the body, excluding the nuchal, and involve five or more dorsal and ventral scale lengths. In contrast, *P. b. hobartsmithi* usually has shorter black rings (83%, 9 of 11 specimens), all except the nuchal ring involving four or fewer dorsal and ventral scale lengths over most of the body. In addition, the nuchal ring usually (89%, 47 of 53) is complete ventrally, versus usually (82%, 9 of 11) incomplete ventrally. The maximum median or paramedian dorsal length of nuchal ring is 7–13 dorsal scales (92% with 8 or more), versus a nuchal ring usually (80%, 8 of 11) 5–7 dorsal scales long. Total body black rings number 7–13 (\bar{x} = 9.8, N = 52), with 90% of specimens having 11 or fewer, versus 11–16 black body rings, with 82% (9 of 11) having 12 or more. Total black tail rings number 4–9 (\bar{x} = 5.9, N = 37), with 95% of specimens having 8 or fewer, versus 8–15 black tail rings, with 86% (6 of 7) having 9 or more. The number of ventrals that are 2/3 or more black number 25–

62 (\bar{x} = 45.7, N = 9), versus 2–41, with only 3 specimens having over 24 (\bar{x} = 24.0, N = 8). The shortest black ring on the complete tail is 5–8 subcaudals in length (N = 8), versus 1–4 subcaudals in *P. b. hobartsmithi*. The mean of two proportions on the body: (midline black ring length in mm over adjacent longest interval length, and black ring length over shortest adjacent interval length) is 55–100 (N = 10), versus 31–109 (N = 9, with only two over 52). The longest black ring on the tail is 7–15 subcaudals in length (N = 5), versus 2–7 subcaudals in *P. b. hobartsmithi* (N = 5).

• **REMARKS.** This subspecies is extensively mimetic of the sympatric *Micrurus fulvius tener*. Additional notes on variation are in Smith and Chiszar (1996).

2. *Pliocercus bicolor hobartsmithi* Liner Plateau False Coral Snake

Pliocercus aequalis: Cope 1887:79 (Teziutlán, Puebla; part, *nec* Salvin).

Pliocercus elapoides: Cope 1887:79 (Puebla; part, *nec* Cope).

Urotheca elapoides: Savage and Crother 1989:356 (part, *nec* Cope).

Pliocercus laticollaris: Taylor 1949:171 (*nec* Smith).

Pliocercus elapoides hobartsmithi Liner 1960:217. Type locality, "El Salto Falls, San Luis Potosí, Mexico." Holotype, Tulane University 17600, a juvenile male, collected by E.A. Liner, 30 July 1958 (not examined by authors).

Pliocercus elapoides celatus: Campbell and Lamar 1989: fig. 510 (*nec* Smith).

Pliocercus bicolor hobartsmithi: Smith and Chiszar 1996:45.

• **DIAGNOSIS.** See **Diagnosis** for *Pliocercus b. bicolor*.

• **REMARKS.** This subspecies is extensively mimetic of the sympatric *Micrurus fulvius microgalbicus*. Additional notes on variation are in Smith and Chiszar (1996).

• **ACKNOWLEDGMENTS.** We are indebted to Ernest A. Liner for help with the literature, to Deborah Aguiar for executing the map and figure, to Cornell University Press for permission to reproduce figures 57 and 510 from Campbell and Lamar (1989), and to Krieger Publishing Co. for permission to reproduce Pattern 26 from Roze (1996).

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